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ON THE SONORAN SIDE OF THE GULF

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Since my visit to San Felipe on the Gulf coast of Lower California in May of last year, I have had a great desire to explore the Sonora coast on the opposite side of the Gulf.

After some discussion with Mr. Clinton Abbott, Director of the San Diego Museum of Natural History, we decided on an expedition to Punta Peñasco, a point between Adair Bay and Bahia San Jorge. Mr. L. M. Huey (curator of birds and mammals) was chosen to head the expedition, with two assistants, Lorenzo Cook and Phil. Lichty.

On February 6 we left San Diego with provisions for three weeks, forty-five gallons drinking water, extra gasoline, and complete camp outfit, in the Museum's Ford truck. The main paved highway we left at Gila Bend and started due south over a well graded desert road for eighty miles to the international boundary, passing midway the important copper mining town of Ajo, where the mines have been shut down for several years.

The desert vegetation was mostly a well spaced, even growth of creosote bush with an occasional mesquite, and comparatively little cactus. About twenty miles from the border we passed quite close to the Ajo Mountains which are composed mostly of black lava. It is one of the most spectacular ranges I have ever seen; with its fantastic crags and spires reminding one of some painted scene in a theater. Perhaps they seemed more fantastic in this colorful hour before sunset, when all the wonderful shades of blue, lavender and purple appear, as all desert travelers know.

Just below the border, the sleepy little town of Sonoyta lies in a green oasis formed by the Sonoyta River. It is practically

self-supporting save for a few imported American clothes and sundries. They live under their own vines and fig trees and grind their corn for tortillas as in ages past. They use the primitive "arastras," driven by a blindfolded donkey, to crush a little gold ore brought from the neighboring mountains. About twelve miles to the southeast is the San Francisco range of granitic mountains, and as our trail ran quite close to the southern end, we stopped for a short exploration. On one of the north slope I uncovered a small colony of desert micrariontas as yet unidentified.

Along this part of the road was quite a vigorous growth of mesquite, ironwood, palo verde, and numerous "saguaros" or giant cacti, rarely branched.

As the road ran southwestward toward the Gulf, the vegetation grew sparser until nothing but creosote bush remained. The black lava Pinacate Range lay off to the right, where a few mountain sheep still live.

It was long after dark when we reached the fifteen miles of sand hills bordering the coast. We were overloaded by about a thousand pounds with extra gas, water and provisions, besides our camp and collecting equipment. The road had not been "brushed" lately and the ruts were worn deep in the soft sand. We were stalled several times, when we had to pull up all the brush in the vicinity to put under the wheels and then all go at it and push. After being stalled many times we at last reached our destination about midnight, when we slept fitfully under the stars till morning,—dreaming we were still stalled in the sand.

We found a level spot about a hundred yards from the beach where we pitched our tents and made camp as shipshape as possible.

The collection of habitations of the fisherfolk was wonderful to behold, some made of heaped up lava blocks for sides with canvas on tin can roofs, others entirely of tin cans and in one hillside was a row of dugouts which we called the "Troglodyte village." One "cave man" and his wife were running a *panderia* (bakery) where good "pan blanco" and "pan dulce"

could be purchased at a peso per dozen. Another family from Guaymas, here for the season, kept a small *tienda* (store) where a few necessities could be purchased, such as panoche, red beans, a few canned goods, gas, water and a little wood; all hauled sixty-two miles over these terrible roads from Sonoyta.

During the fishing season for the black sea bass or "tortuava," as they are called, there are a dozen or so small fishing boats at anchor in the shelter of the tiny natural breakwater of lava boulders which runs out some five hundred yards from shore. As the tides in this part of the Gulf have a rise and fall of eighteen feet and more, the boats were all lying on their sides on the beach at low water.

On our arrival a series of heavy tides was just commencing. As the tides are about two hours later than on the Pacific coast, the best tides came after dark, but the secondary morning tides proved very acceptable. From our camp at Punta Peñasco a beautiful sand beach curved for seven miles to "Punta La Cholla" on the north, which marked the beginning of Adair Bay. On the other side stretched more miles of sand beach toward Bahía San Jorge.

The upper parts of the sand beaches were composed of unnumbered tons of broken and finely ground shells, which would not pack and made walking difficult. At an extreme low tide the transformation was almost unbelievable. After a fall of about ten feet the sand beach gave place to a series of fossiliferous sandstone ledges with small sand patches intervening, paralleling the shore. When the tide runs far from shore there are three or four of these ledges visible. On the shoreward side of these ledges, the soft sandstone was being continually undercut, leaving large strips a few inches thick with an overhang of two or three feet. While the upper side had a good growth of algae, the under surface was brightly decorated with bunches of ascidians in blue, orange and yellow, where many echinoids and crustaceans had their homes. Large slabs of this undercut sandstone were constantly breaking from the main ledges, giving wonderful hiding places for rarer mollusks such as *Cypraea*, *Trivia*, *Lima*, *Anachis*, and *Pleurotoma*. In the edges of freshly

broken slabs could be seen holes bored into the fossils of thousands of years ago by a recent burrowing mollusk called *Lithophagus aristatus*, a few *L. attenuata* and *Petricola* were with them. In the sand between ledges, near town, were many *Olivella dama*, which the native women were gathering to make necklaces. On the reefs many *Murex nigrinus* were feeding on an inexhaustible supply of *Cerithium stercus-muscarum* and plowing through the sand searching for bivalves were the beautiful pink mouthed *Murex bicolor*. Further along the sand beach were found some fine live *Agaronia testacea*, which leave a heavy dent in the sand at low tide. Near La Cholla I struck a small bar of coarse shell sand not over an acre in extent, where some fine large *Conus interruptus* and the huge *Oliva incrassata* were burrowing; also quite a colony of *Glycimeris maculata*, the first I had ever taken in quantity. We secured sufficient for a very delicious soup, probably the first such soup on record. The upper surface of some of the rocks was covered with a brownish green algae which afforded feeding grounds for *Trivia solandri* and a small black *Crassispira pluto* Pilsbry & Lowe.

The numerous large kitchen-middens both at Punta Peñasco and Punta La Cholla contained thousands of these *Glycimeris maculata* with rarely a valve of the much larger *G. gigantea*. With these were quantities of the huge *Cardita affinis*, *Chione*, *Ostrea*, *Paphia*, *Cardium* and large *Murex*. No stone artifacts or black earth were noted in any of these shell heaps. Perhaps the early inhabitants preferred their shell-fish raw.

The sea gulls enjoyed gathering live *Cardium procerum*, flying aloft, dropping them on the rocks, where one valve would be broken, affording an easy morsel.

There were many old valves of *Dosinia ponderosa* lying inside down,—thus furnished good hiding places for the small black *Seila attenuata*.

For two weeks the days were clear and warm and the nights not too cold; no wind ruffled the dark blue mirror surface of the Gulf. Every night a gorgeous sunset with varying cloud and color effects over the San Pedro Martyr Mountains across the Gulf in Lower California.

(To be continued)